RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2178
Docket No.: 826.1931

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Tsuyahiko SHIMADA

Serial No. 10/784,977 Group Art Unit: 2178

Confirmation No. 8981

Filed: February 25, 2004 Examiner: Manglesh M. Patel

For: DOCUMENT PROCESSING APPARATUS AND STORAGE MEDIUM

AMENDMENT AFTER FINAL REJECTION

Attention: **MAIL STOP AF**
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Do Not Enter

/MMP/ 10/16/08

This is in response to the Office Action mailed July 10, 2008, and having a period for response set to expire on October 10, 2008.

The following amendments and remarks are respectfully submitted. Entry of the claim amendments and reconsideration of the amended claims is respectfully requested, because it is believed that the claim amendments and remarks clarify the patentably distinguishing features of the present invention over the relied upon references to place the application in condition for allowance.

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND and CANCEL claims in accordance with the following:

1. (currently amended) A document processing apparatus which displays a document image using image data of a document having one or more entry columns, comprising:

an image data obtaining unit obtaining image data of a document;

~~an area discrimination~~a density conversion unit ~~discriminating~~classifying an area of a document image ~~indicated by~~based upon the obtained image data ~~obtained by said image data obtaining unit, and discriminating at least between~~ into two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information, and specifying an image row to be thinned;

a data processing unit processing the document image by

increasing ~~the~~a ratio of the useful information area to ~~the~~an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless the information area based on the ~~discrimination~~classifying by said ~~area discrimination~~density conversion unit,

recognizing an entry column on the document image,

correcting a position of the recognized entry column, based upon the specified image row to be thinned, and

performing an operation to display on the document image the recognized entry column including presence/absence of a recognized mark, based upon the specified image row to be thinned; and

a display control unit controlling displaying of the~~a~~ document image including the recognized entry column and the thinned image row on a display device ~~using the image data obtained by said data processing unit processing at least one of the first and second partial image data~~,

wherein said ~~area discrimination~~density conversion unit considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and ~~discriminates~~ classifies the useful information area from the useless information area based on a counting result comparison to a predetermined number.

2. (Cancelled)

3. (currently amended) The apparatus according to claim 1, wherein

when said ~~area discrimination~~density conversion unit ~~discriminates~~classifies the useful information area from the useless information area based on whether or not the number of pixels counted by considering one direction is equal to or smaller than a predetermined value, said data processing unit increases a ratio of the useful information area to the entire area by performing on at least the second partial image data a process of thinning lines having the number of pixels equal to or smaller than a predetermined value in the lines in the one direction.

4. (Previously Presented) The apparatus according to claim 1, wherein said data processing unit performs a process on at least one of the first and second partial image data so that a ratio of the useful information area to the entire area is increased by using different display magnifications of the useful information area and the useless information area.

5. (currently amended) A method for displaying a document image using image data of a document having one or more entry columns, comprising:

~~discriminating~~classifying an area of ~~a~~the document image indicated by the image data of the document~~, and discriminating at least between~~ into two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information;

specifying an image row to be thinned according to the classifying;

increasing a ratio of the useful information area to ~~the~~an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless information area based on the ~~discrimination~~classifying;

recognizing an entry column on the document image,

correcting a position of the recognized entry column, based upon the specified image row to be thinned;

performing an operation to display on the document image the recognized entry column including presence/absence of a recognized mark, based upon the specified image row to be thinned; and

displaying the document image including the recognized entry column and the thinned image row on a display device ~~using the image data obtained by processing at least one of the first and second partial image data~~,

wherein said ~~discriminating an~~classifying of the area of the document image considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and ~~discriminates~~classifies the useful information area from the useless information area based on a counting result comparison to a predetermined number.

6. (currently amended) A document processing apparatus which processes a document having one or more entry columns, comprising:

an image data obtaining unit obtaining image data of a document;

~~an area discrimination unit discriminating~~a density conversion unit classifying an area of a document image ~~indicated by~~based upon the obtained image data ~~obtained by said image data obtaining unit, and discriminating~~into at least between two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information, and specifying an image row to be thinned;

a data processing unit processing the document image by

increasing a ratio of the useful information area to ~~the~~an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless information area based on the ~~discrimination~~classifying by said ~~area discrimination unit;~~ density conversion,

~~a display control unit displaying a document image on a display device using the image data obtained by said data processing means processing at least one of the first and second partial image data;~~

~~a document recognition unit~~ recognizing an entry column entered on the document image indicated by the image data, ~~and~~

updating a position of the entry column ~~depending on a result of the processing by said data processing unit;~~ according to the specified image row to be thinned,

performing an operation to display on the document image the recognized entry column including presence/absence of a recognized mark, based upon the specified image row to be thinned, and

~~a correction unit~~ correcting the presence/absence of ~~an~~the entry in the recognized entry column ~~recognized by said document recognition unit~~ at an instruction of a ~~user,~~user; and

a display control unit controlling displaying of the document image including the recognized entry column and the thinned image row on a display device,

wherein said ~~area discrimination~~density conversion unit considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and ~~discriminates~~classifies the useful information area from the useless information area based on a counting result comparison to a predetermined number.

7. (currently amended) A storage medium storing a program that when executed causes a document processing apparatus to perform a method that displays a document image using image data of a document having one or more entry columns, said method comprising:

obtaining image data of the document;

~~discriminating~~classifying an area of ~~a~~the document image indicated by the image data ~~obtained by said obtaining function, and discriminating at least between~~into two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information;

specifying an image row to be thinned according to the classifying;

increasing a ratio of the useful information area to ~~the~~an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless information area based on the ~~discrimination by said discriminating function~~classifying; and

recognizing an entry column on the document image;

correcting a position of the recognized entry column, based upon the specified image row to be thinned;

performing an operation to display on the document image the recognized entry column

including presence/absence of a recognized mark, based upon the specified image row to be thinned;

displaying the document image including the recognized entry column and the thinned image row on a display device ~~using the image data obtained by processing at least one of the first and second partial image data by said increasing function~~,

wherein said ~~discriminating an~~classifying of the area of the document image considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and ~~discriminates~~classifies the useful information area from the useless information area based on a counting result comparison to a predetermined number.

8. (currently amended) A storage medium storing a program that when executed causes a document processing apparatus to perform a method that processes a document having one or more entry columns, said method comprising:

obtaining image data of the document;

~~discriminating~~classifying an area of a document image indicated by the image data ~~obtained by said obtaining, and discriminating at least between~~into two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information;

specifying an image row to be thinned;

increasing a ratio of the useful information area to ~~the~~an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless information area based on the ~~discrimination~~classifying by said ~~discriminating function~~density conversion;

~~displaying the document image on a display device using the image data obtained by processing at least one of the first and second partial image data by said increasing function;~~

recognizing an entry column entered on the document image indicated by the image ~~data, and~~ data;

updating a position of the entry column ~~depending on a result of the increasing of the ratio of the useful information area to the entire area~~according to the specified image row to be thinned; ~~and~~

performing an operation to display on the document image the recognized entry column

including presence/absence of a recognized mark, based upon the specified image row to be thinned;

correcting the presence/absence of ~~an~~the entry in the recognized entry column ~~recognized by said document recognition means~~ at an instruction of a ~~user,~~user;

displaying the document image including the recognized entry column and the thinned image row on a display device,

wherein said ~~discriminating an~~classifying of the area of the document image considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and ~~discriminates~~classifies the useful information area from the useless information area based on a counting result comparison to a predetermined number.

9. (currently amended) A document processing apparatus which displays a document image using image data of a document having one or more entry columns, comprising:

an image data obtaining means for obtaining image data of a document;

~~an area discrimination means~~a density conversion means for ~~discriminating~~classifying an area of a document image indicated by the image data ~~obtained by said image data obtaining means, and discriminating at least between~~into two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information, and specifying an image row to be thinned;

a data processing means for processing the document image by

increasing a ratio of the useful information area to ~~the~~an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless information area based on the ~~discrimination~~classifying by said area ~~discrimination~~density conversion means;

recognizing an entry column on the document image,

correcting a position of the recognized entry column, based upon the specified image row to be thinned, and

performing an operation to display on the document image the recognized entry column including presence/absence of a recognized mark, based upon the specified image row to be thinned; and

a display control means for displaying ~~a~~the document image including the recognized

entry column and the thinned image row on a display device ~~using the image data obtained by said data processing means processing at least one of the first and second partial image data~~,

wherein said ~~discrimination~~density conversion means considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and ~~discriminates~~classifies the useful information area from the useless information area based on a counting result comparison to a predetermined number.

10. (currently amended) A document processing apparatus which processes a document having one or more entry columns, comprising:

image data obtaining means for obtaining image data of a document;

~~area discrimination~~density conversion means for ~~discriminating~~classifying an area of a document image indicated by the image data ~~obtained by said image data obtaining means, and discriminating at least between~~into two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information, and specifying an image row to be thinned;

data processing means for processing the document image by

increasing a ratio of the useful information area to ~~the~~ an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless information area based on the ~~discrimination~~classifying by said ~~area discrimination~~density conversion means;

~~display control means for displaying a document image on a display device using the image data obtained by said data processing means processing at least one of the first and second partial image data;~~

~~document recognition means for~~ recognizing an entry column entered on the document image indicated by the image data, ~~and~~

updating a position of the entry column ~~depending on a result of the processing by said data processing means;~~ according to the specified image row to be thinned,

performing an operation to display on the document image the recognized entry column including presence/absence of a recognized mark, based upon the specified image row to be thinned, and

~~correction means for~~ correcting the presence/absence of ~~an~~the entry in the recognized

entry column ~~recognized by said document recognition means~~ at an instruction of a ~~user,~~user; and

display control means for displaying the document image including the recognized entry column and the thinned image row on a display device,

wherein said ~~discrimination means~~density conversion mean considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and ~~discriminates~~classifies the useful information area from the useless information area based on a counting result comparison to a predetermined number.

11. (currently amended) A method of processing a document image which has one or more entry columns, the method comprising:

~~discriminating~~classifying an area of ~~an obtained~~the document image ~~between~~into an area of useful information and an area of useless information, based upon density conversion information of the document image;

recognizing an entry column in the document image;

specifying thinning of the useless information area of the document image, according to the classifying;

updating a position of the recognized entry column in the document image, according to the specified useless information area to be thinned, and

displaying ~~at least one of first and second partial image data obtained by increasing a ratio of useful information to an entire area by processing of the first partial image data and the second partial image data which is image data of a portion for display of the useless information area based on the discriminating~~the document image including the recognized entry column and the thinned image row on a display device~~,~~

~~wherein said discriminating an area of the document image considers at least one direction in counting a number of pixels assumed to be used in displaying information about a document image represented by the image data, and discriminates the area of useful information from the area of useless information based on a counting result comparison to a predetermined number~~.

12. (cancelled)

REMARKS

Claims 1 and 3-12 have been pending in the application.

Claims 1 and 3-12 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Kodaira (U.S. Patent No. 6,868,183) in view of Schneider (U.S. Patent No. 5,229,589).

The claims are amended, cancelled without disclaimer or prejudice, and, thus the pending claims remain for reconsideration, which is requested. No new matter has been added.

Amended independent claims clarify:

> ~~an area discrimination~~a density conversion unit ~~discriminating~~classifying an area of a document image indicated by the image data obtained by said image data obtaining unit~~, and discriminating at least between~~ into two types of areas, that is, a useful information area having useful information for document processing and a useless information area having no useful information, and specifying an image row to be thinned;
>
> a data processing unit processing the document image by
>
> increasing ~~the~~a ratio of the useful information area to ~~the~~an entire area by processing at least one of a first partial image data which is image data of a portion for display of the useful information area and a second partial image data which is image data of a portion for display of the useless the information area based on the ~~discrimination~~classifying by said ~~area discrimination~~density conversion unit,
>
> recognizing an entry column,
>
> correcting a position of the recognized entry column, based upon the specified image row to be thinned, and
>
> displaying on the document image the recognized entry column including presence/absence of a recognized mark, based upon the specified image row to be thinned … (claim 1).

For example, the present application page 18, line 7 to page 23, line 10 supports the claims. It is readily apparent that Kodaira and Schneider do not expressly or implicitly disclose the claimed embodiments to support a prima facie case of obviousness, because Kodaira, as acknowledged by the Office Action, does not disclose the claimed "specifying an image row to be thinned." So the Office Action Response to Arguments relies upon Schneider, which discusses in column 2, lines 18-47, defining areas of interest on a scanned page image by drawing a box around each answer area with a mouse and "the preprinted data within the area(s) of the interest pixel map is subsequently expanded during image differentiation to

provide greater accuracy in scanning the completed questionnaire pages and detecting answer marks." So Schneider discusses expanding the data in the identified area of interest as part of image differentiation to detect answer marks. However, nothing has been cited or found that discloses expressly or implicitly to one skilled in the art to combine Schneider's expansion of data in the identified area of interest as part of image differentiation to detect answer marks, with Kodaira, and then further modify Schneider to provide the claimed "specifying an image row to be thinned … recognizing an entry column, correcting a position of the recognized entry column, based upon the specified image row to be thinned, and displaying on the document image the recognized entry column including presence/absence of a recognized mark, based upon the specified image row to be thinned," and seen a benefit of displaying the document image with recognized entry columns as corrected to include the thinned image row, so the entire useful information area of the document image can be displayed on a display device. Namely "a display control unit controlling displaying of the~~a~~ document image including the thinned image row on a display device."

Independent claims 5-10 require similar patentably distinguishing features as claim 1.

Independent claim 11 is allowable, because in contrast to Kodaira and Schneider, independent claim 11 provides "updating a position of the recognized entry column in the document image, according to the specified useless information area to be thinned, and displaying the document image including the recognized entry column and the thinned image row on a display device."

Withdrawal of the rejections and allowance of the claims is requested.

CONCLUSION

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,
STAAS & HALSEY LLP

/Mehdi Sheikerz/

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